

CLAIMS

WE CLAIM:

1. A middle ear prosthesis comprising:

2 a piston adapted to extend through an oval window when implanted in a  
human ear;

4 a pair of jaws for engaging an ossicle when implanted in a human ear;

5 a spring coupled to the jaws for biasing the jaws toward one another to  
6 provide clamping pressure; and

means for operatively connecting the jaws to the piston.

2. The middle ear prosthesis of claim 1 further comprising a swivel joint

2 coupling the spring to the pair of jaws.

3. The middle ear prosthesis of claim 2 wherein the swivel joint is

2 surrounded by an elastomer.

4. The middle ear prosthesis of claim 1 wherein each of the jaws

2 comprises a body having a semi-cylindrical inner surface.

5. The middle ear prosthesis of claim 4 wherein the spring comprises a  
2 pair of flexible support arms each operatively coupled to an associated one of the jaws.

6. The middle ear prosthesis of claim 5 wherein each support arm has  
2 one end received in an opening in the associated jaw and another end coupled to the piston.

7. The middle ear prosthesis of claim 1 wherein each support arm has  
2 one end surrounding the body of the associated jaw and another end coupled to the piston.

8. The middle ear prosthesis of claim 1 wherein the spring is integrally  
2 formed between the pair of jaws and is of a flexible material different from a material of the  
jaws.

9. The middle ear prosthesis of claim 8 wherein the connecting means  
2 comprises a wire operatively connected to one of the jaws and to the piston.

10. The middle ear prosthesis of claim 9 further comprising a second wire  
2 connected to the other jaw so that the wires can be squeezed together to open the jaws.

11. The middle ear prosthesis of claim 1 further comprising a spacer to  
2 temporarily hold the jaws in an open position until implanting in a human ear is completed.

12. The middle ear prosthesis of claim 1 wherein the spring is of a  
2 biocompatible material.

13. The middle ear prosthesis of claim 1 wherein the spring is of a  
2 material selected from titanium or stainless steel.

14. The middle ear prosthesis of claim 1 wherein the piston is of a  
2 biocompatible material.

15. The middle ear prosthesis of claim 1 wherein the piston is of a  
2 material selected from titanium or PTFE.

16. The middle ear prosthesis of claim 1 wherein the jaws are of a  
2 bioactive material.

17. The middle ear prosthesis of claim 1 wherein the jaws are of  
2 hydroxylapatite.

18. A self crimping ossicular prosthesis comprising:

2 a piston adapted to extend through an oval window when implanted in a  
human ear;

4 a pair of jaws of a bioactive material each comprising a body having a semi-  
cylindrical inner surface for engaging opposite sides of an ossicle when implanted in a  
6 human ear, to anchor to the ossicle;

8 a pair of flexible support arms each operatively coupled to an associated one  
of the jaws and to the piston for biasing the jaws toward one another to provide clamping  
pressure..

19. The self crimping ossicular prosthesis of claim 18 wherein each  
2 support arm has one end received in an opening in the associated jaw to provide a swivel  
joint and another end coupled to the piston.

20. The self crimping ossicular prosthesis of claim 19 wherein the swivel  
2 joint is surrounded by an elastomer.

21. The self crimping ossicular prosthesis of claim 18 wherein each  
2 support arm has one end surrounding the body of the associated jaw and another end coupled  
to the piston.

22. The self crimping ossicular prosthesis of claim 18 further comprising  
2 a spacer to temporarily hold the jaws in an open position until implanting in a human ear is  
completed.

23. The self crimping ossicular prosthesis of claim 18 wherein the support  
2 arms are of a material selected from titanium or stainless steel.

24. The self crimping ossicular prosthesis of claim 18 wherein the piston  
2 is of a biocompatible material.

25. The self crimping ossicular prosthesis of claim 18 wherein the piston  
2 is of a material selected from titanium or PTFE.

26. The self crimping ossicular prosthesis of claim 18 wherein the jaws  
2 are of hydroxylapatite.

27. A self crimping ossicular prosthesis comprising:

2 a piston adapted to extend through an oval window when implanted in a  
human ear;

4 a pair of jaws of a bioactive material each comprising a body having a semi-  
cylindrical inner surface for engaging opposite sides of an ossicle when implanted in a  
6 human ear, to anchor to the ossicle;

8 a spring element of a flexible material, different from the pair of jaws,  
integally coupled to the jaws for biasing the jaws toward one another to provide clamping  
pressure; and

10 a support arm operatively coupled to one of the jaws and to the piston.

28. The self crimping ossicular prosthesis of claim 27 wherein the jaws

2 are spaced apart with the semi-cylindrical inner surfaces facing one another, and the spring  
element is connected between the pair of bodies to define a substantially "C" shaped  
4 attachment mechanism.

29. The self crimping ossicular prosthesis of claim 27 further comprising

2 a second arm connected to the other jaw so that the arms can be squeezed together to open  
the jaws.

30. A self crimping ossicular prosthesis comprising:

2 a pair of jaws of a bioactive material each comprising a body having a semi-cylindrical inner surface for engaging opposite sides of an ossicle when implanted in a  
4 human ear, to anchor to the ossicle;  
a spring element of a flexible material, different from the pair of jaws,  
6 operatively coupled to the jaws for biasing the jaws toward one another to provide clamping pressure; and  
8 an actuator element operatively coupled to the spring element.

31. The self crimping ossicular prosthesis of claim 30 wherein the actuator

2 element comprises a piston adapted to extend through an oval window when implanted in a human ear.

32. The self crimping ossicular prosthesis of claim 30 wherein the actuator

2 element comprises a transducer element.

33. The self crimping ossicular prosthesis of claim 32 wherein the

2 transducer element comprises one of a coil or a magnet of an electromagnetic actuator; or a piezoelectric element.